

Researchers develop quick, cheap HIV/AIDS test

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A Cornell researcher is working to develop a quick, simple and cheap immune-system test for people in the developing world. It could help HIV/AIDS sufferers in the poorest countries get appropriate treatment to extend their lives, possibly by as much as 10 to 15 years.

The work is part of an \$8.6 million international consortium, called the CD4 Initiative, led by Imperial College in London and funded by the Bill and Melinda Gates Foundation. Antje J. Baeumner, Cornell associate professor of biological and environmental engineering, has been awarded an initial \$386,000 (subject to annual renewal for four years) from the consortium to determine a way to simply assess the critical HIV/AIDS immune system factors -- CD4 T-cell count, or CD4+ T-lymphocytes count -- in the blood.

"When patients are infected with HIV/AIDS, the number of circulating CD4 T-cells drops significantly," explains Baeumner. "If they get the appropriate retroviral treatment, their life span can be increased by many years. CD4 counts assist in the decisions on when to initiate and when to stop the treatment, which makes this test so important.

"While such testing is routine in Western countries -- and used repeatedly over the course of treatment to see if interventions are effective -- it's unavailable to many people in the developing world, especially in rural areas."

For the first two years, Baeumner will work on developing a test for

CD4+ T-lymphocytes in the blood that can be likened to a pregnancy test using biosensor nanovesicles (microscopic, fluid-filled pouches made of phospholipids that can deliver drugs -- also known as liposomes) to enhance the signal. Several other consortium organizations also are working on the similar product development so that the best possible test can be developed in the shortest time possible.

"Currently, most people in the world, such as those in Third World countries, infected with HIV have no access to detection technology," explains Baeumner, noting that 40 million people live with HIV/AIDS worldwide, many of them in areas where electricity is unreliable or nonexistent, water quality is poor and there are few, if any, highly skilled health-care technicians. "This test, however, is being developed to endure harsh temperature conditions and be truly simple -- no batteries will be needed, for example."

Source: Cornell University News Service

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